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by

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Young salmon are tagged at various locations throughout the country with coded wire tags. They are released at different times of the year, and in various river systems (Fig 1) to establish the best time of year and the best locations for release. The majority of the tagged fish are hatchery reared,the only exception being in the Corrib and Blackwater rivers where wild smolts are tagged. All micro-tagged fish are adipose fin clipped. Some hatcheries also use an adipose fin clip to mark their reared fish.

Twenty nine thousand net caught salmon were examined at a number of locations in Mayo. All fish with adipose fin clips were screened with a magnetic tag detector. A total of 736 tags were recovered from which it was estimated that rearing stations contributed over 1,300 fish to the north Mayo catch.

THE CODED WIRE TAG

The tag, measuring 1.1mm with a diameter of 0.25mm is just visible to the naked eye. The tags are supplied in the form of a coil of steel wire and each tag bears a number in binary code. All tags from each coil have the same number so that batches of fish can be recognised. Under a microscope the marks on the tag can be read to identify the date and place of release of the young fish.

A tag injector feeds the coded stainless steel wire from a spool through a hollow needle, cuts off the tags of the appropriate length and implants them automatically. Head moulds specially made for each size of fish being tagged ensure correct placement of the tag in the nasal cartilage. Fig. 2 shows the dissected head of a fish with the tag in place.

The magnetic detector makes a "bleep" sound when a tagged salmon passes through it. A core of about 2 cm in diameter is removed from the head of any fish which gives a positive reaction. The tiny tag is subsequently removed from the core and read under a microscope.

THE RECOVERY PROGRAMME IN MAYO

The commercial catch was sampled at Killala, Moy Fishery, Belderrig, Porturlin, Belmullet, Geesala, Doohoma and Achill during the salmon season. The main areas fished by the fishermen from these locations are shown in Fig 3. These areas are not strictly defined and there is a considerable degree of overlap.

Scales were taken from a random sample of the catch to establish the percentage of salmon (2 sea winter) and grilse (1 sea winter fish) in the catch. There is a considerable overlap in the weight grading used by the fish trade which markets fish of more than 3.6 kg as "salmon" . We have found 1 sea winter fish (grilse) weighing 5.6 kg in July.

In 1985 tagged smolts were released at 11 locations throughout Ireland (Fig 1). Details of the numbers released at each and the numbers recovered are given in Table 1 and Fig 3.

The 1986 salmon season began in early June. Catches in general were poor in north Mayo, while Achill had a relatively good season. The poor north Mayo catch was in stark contrast with catches nationally in 1986. There was considerable damage caused by seals to salmon in the nets. However there was no way of quantifying this damage as, despite requests for specimens, damaged fish were not produced.

The tag recovery programme began on 16 June and continued until 24 July. During this time a total of 29,535 salmon were examined, 1,104 clips were recorded and 736 tags were taken. Approximately half the reported catch in the region was sampled. The total number of tagged fish taken in the fishery, the "fishing mortality", can be estimated by multiplying the number of tags collected by a raising factor of 2.

Fish from all the tagging locations were represented in the catch. Details of the number of tags from each location and the fishing mortality in North Mayo are given in Table 1.

Table 1 **Details of release and recapture for salmon sampled in north Mayo in 1986**

Location	Number of tagged smolts released N	Number of tags recovered R	Fishing mortality (%) 200R/N
ERNE	29538	44	0.29
SCREEBE	9922	54	1.09
BURRISHOOLE	27473	483	3.51
CORRIB(HATCHERY)	64307	27	0.08
CORRIB(WILD)	4714	5	0.38
SHANNON	20692	34	0.21
LEE	20831	11	0.11
BUSH	17966	47	0.52
CRANA	5003	22	0.88
CONNEMARA	7326	5	0.14
BLACKWATER	135	1	1.48

As the the season progressed the number of tagged fish recaptured decreased. This is shown on a weekly basis in Table 2. The percentage of tagged fish dropped from 4% at the end of June to less than 1% at the end of July. This would suggest that hatchery reared fish return earlier than wild fish.

Table 2. Recovery rate of fin-clipped and tagged fish on a weekly basis during the 1986 recovery programme.

Date	Number examined	Percentage clipped	Percentage tagged
16-21 June	4667	5.9	4.0
23-26 June	6545	4.1	2.7
1- 4 July	7028	3.6	2.6
7-11 July	7250	2.3	1.6
14-19 July	2161	0.6	0.3
21-23 July	954	1.2	0.8

The scale samples taken over the period showed that 97% of all the fish sampled were 1 sea winter fish while 2.3% were 2 sea winter fish and 0.7% were previous spawners. The average weight of fish during June was 2.53 kg while in July it was 3.55 kg.

DISCUSSION

The results obtained show the contribution of the various hatcheries to the stock exploited by the Mayo drift net fishermen. The Burrishoole River at Newport contributed by far the greatest number of fish to the Mayo drift nets. Just under 4% of all the fish released at Newport were recaptured in the area. It is estimated that 2.8% of the total salmon catch in the North Mayo area is comprised of hatchery reared fish. This may seem a very low percentage but it does account for over 1,300 fish in Mayo in 1986 based on reported catch alone. The other major contributors to the north Mayo drift nets were the Screebe and Crana rivers with a total fishing mortality of 1.09% and 0.88% respectively. It is apparent from this work that hatchery reared fish made an important contribution to the commercial drift net fisheries. Continuation of the tagging project will lead to increased survival of the young fish to adulthood by indicating the best locations and time of year for release.

ACKNOWLEDGEMENTS

The success of this programme is due mainly to the help of the fishermen, fish processors and dealers who have co - operated fully in all investigations. We also wish to thank Tom Mc Dermott who tags the fish, Anne Cullen who collates the data and Aidan Davey, Ellen Barry and Grainne Malone who assisted in the collection and decoding of tags.

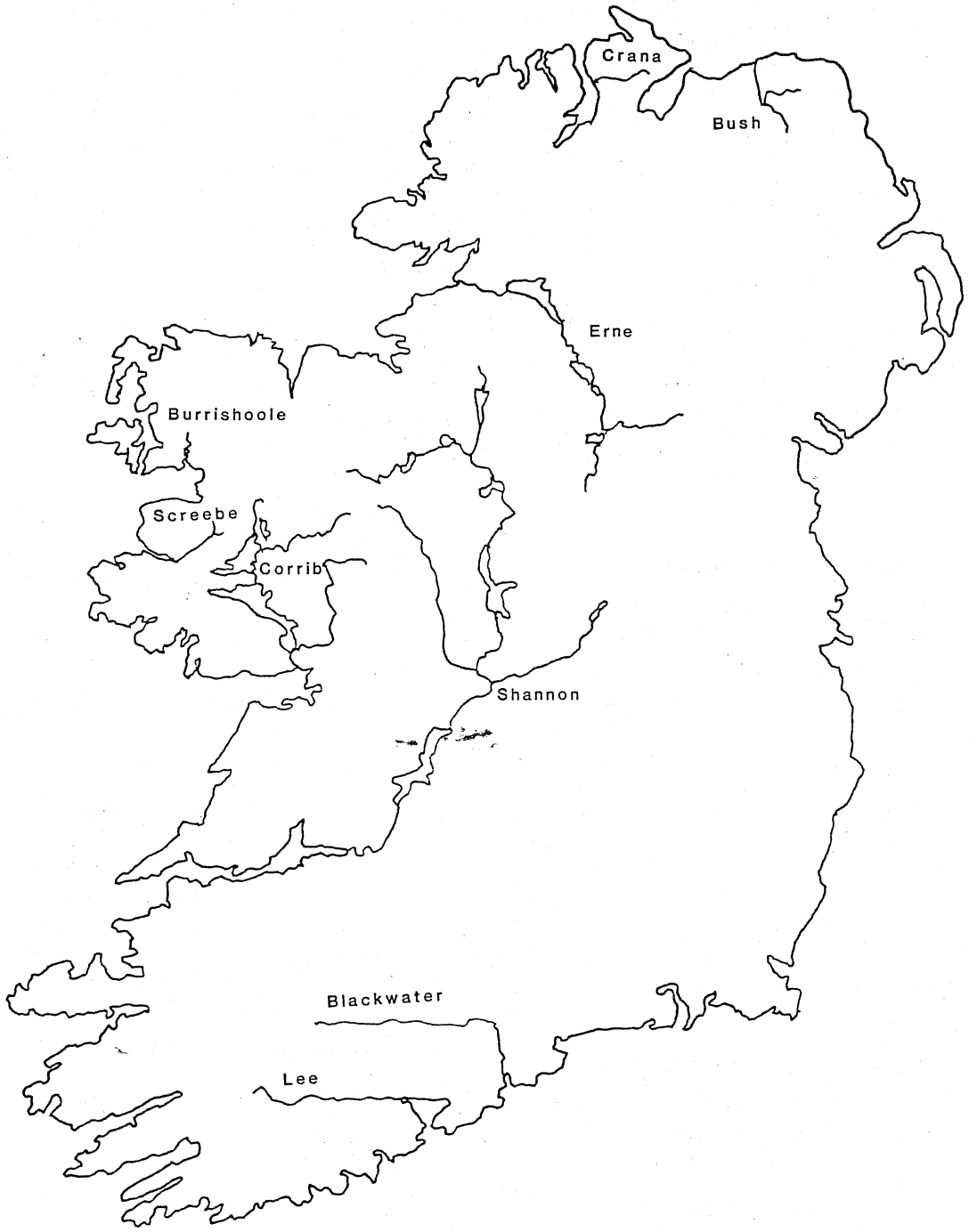

Fig. 1 Map showing rivers where tagged smolts were released

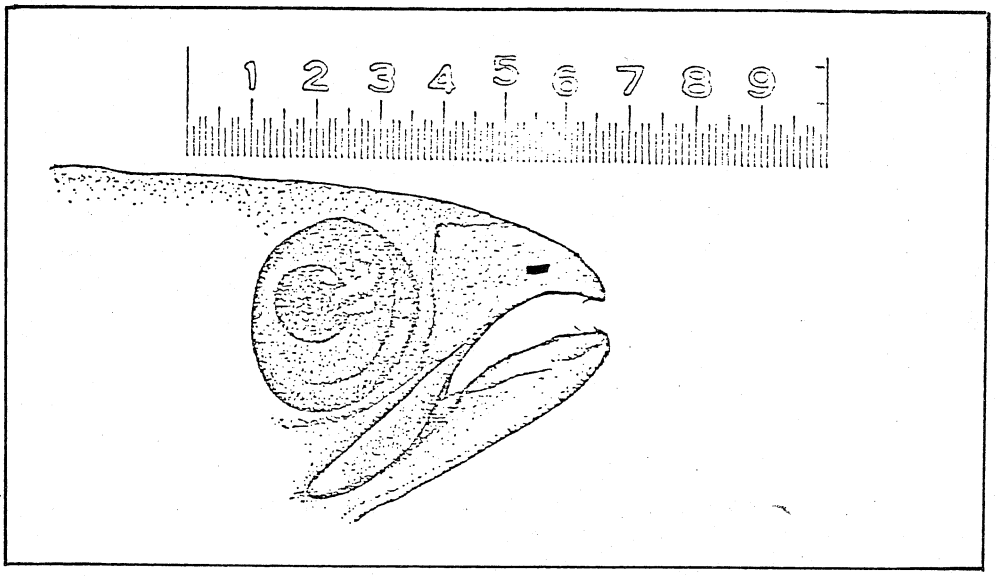

Fig 2 Dissected head of young salmon to show tag in position, scale in centimetres.

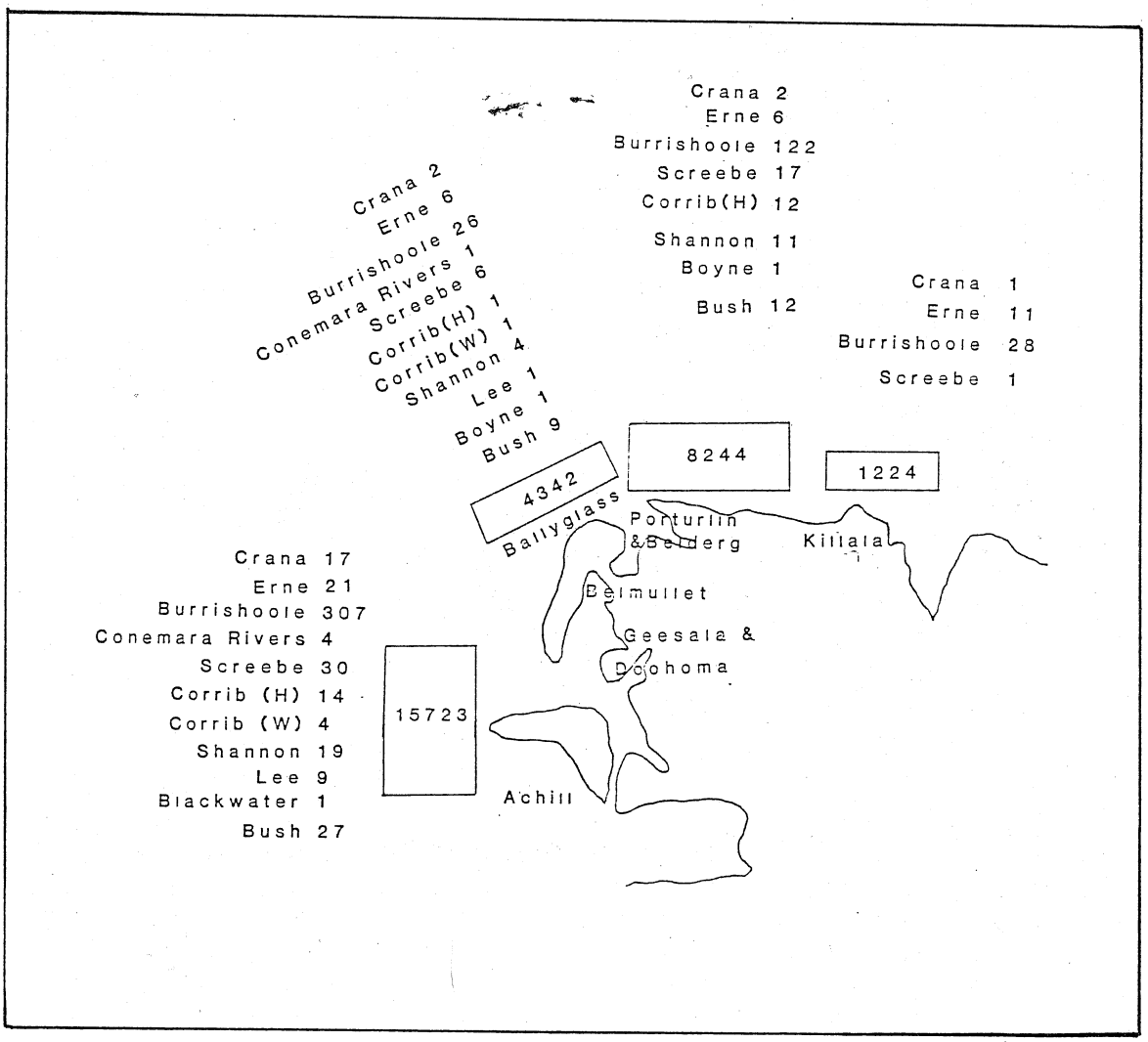

Fig. 3. Main fishing areas and numbers of salmon examined. Numbers of tags from each river recovered in main areas